

# **U.S. Army Corps of Engineers**

U.S. Army Engineering and Support Center, Huntsville, AL

## **Action Memorandum Volume I Engineering Evaluation/Cost Analysis Former Honey Lake Demolition Range- East Shore Area Sierra Army Depot, Lassen County, California**

April 2004

Contract No. DACA87-95-D-0017

Task Order No. 0022

Project No. CA-SIAD-01-SP

**Final**

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# **U.S. Army Corps of Engineers**

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## DECLARATION

This Volume I Engineering Evaluation/Cost Analysis (EE/CA) Action Memorandum represents the selected ordnance and explosives (OE) response actions for the East Shore Area of the Former Honey Lake Demolition Range, Sierra Army Depot, Lassen County, California. The U.S. Army Corps of Engineers is the lead agency under the Defense Environmental Restoration Program at the Sierra Army Depot and has developed this Action Memorandum in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, to be consistent with the National Contingency Plan. This decision document has been prepared based on the administrative records developed for the East Shore Area project site. The U.S. Army approves the Subsurface Clearance to Depth, as described in this Action Memorandum, as the most appropriate means to conduct a Non-Time Critical Removal Action (TCRA) for the East Shore Parcel at Sierra Army Depot.

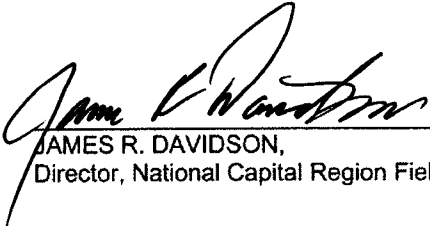
This document has been approved by the undersigned.

Reviewed for Legal Sufficiency:

  
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27 APRIL 2004  
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April 28, 2004  
Date

# ENGINEERING EVALUATION/COST ANALYSIS ACTION MEMORANDUM

East Shore Area  
Former Honey Lake Demolition Range  
Sierra Army Depot  
Lassen County, California

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## 1.0 INTRODUCTION

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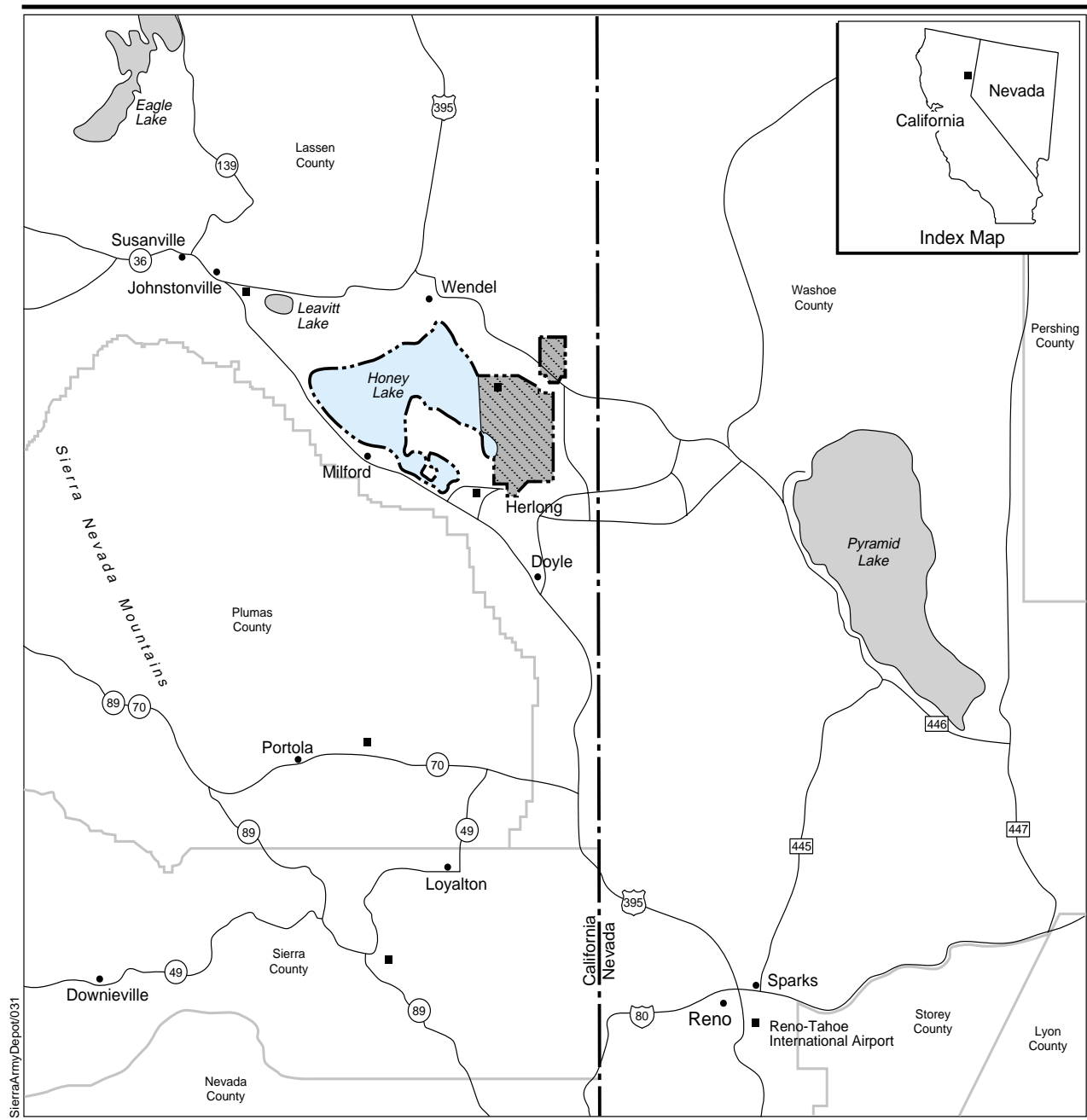
This Action Memorandum documents the decision by the U.S. Army to implement the recommended ordnance and explosives (OE) response actions outlined in the Final Engineering Evaluation/Cost Analysis (EE/CA) Report (Earth Tech, April 2004) for the 1,565-acre East Shore Area of the Former Honey Lake Demolition Range.

**Site Location and Background.** The East Shore Area project site is situated at the northwest corner of the Sierra Army Depot (SIAD) in the Honey Lake area of Lassen County, California, and is approximately 40 miles southeast of Susanville, California, and approximately 55 miles northwest of Reno, Nevada (Figure 1). The purpose of the EE/CA for the East Shore Area was to collect data to support the evaluation of ordnance risk and develop appropriate OE response actions for the project site.

The East Shore Area is composed of private property, and portions of two adjoining Base Realignment and Closure (BRAC) parcels: the Airfield BRAC Parcel (2,285 acres), which includes the Amedee Airfield, and the East Shore BRAC Parcel (971 acres). These two BRAC parcels were identified as excess property and designated for disposal and reuse by the 1995 BRAC Commission in conformance with the BRAC Act of 1990 (U.S. Army Corps of Engineers, 1998). The East Shore Area consists of only those areas situated within the kick-out boundary of the Former Honey Lake Demolition Range.

**Current Site Conditions.** As a result of three EE/CA field investigations conducted at the East Shore Area (Earth Tech, April 2004), current site conditions within each sector at the East Shore Area consist of the following:

- **Airfield Sector:** There were no OE (hazardous) items recovered in this sector. Therefore, there is low risk to OE in this area.
- **East Shore Sector:** Three OE items were recovered in this sector. Therefore, there is high risk to OE in this area.
- **Off-Site Sector:** There were no OE items recovered in this sector. Therefore, there is low risk to OE in this area.
- **Pole Line Road Sector:** A 100-percent subsurface investigation for OE was conducted in this sector (with the exception of 7 anomalies). There were no OE items recovered in this sector. Therefore, there is low risk to OE in this area.
- **Function Test Range Sector:** A subsurface sampling investigation was conducted over the former function test range area (114 OE items were recovered) with the exception of a heavily contaminated 10-acre area. There is low risk to OE in all areas investigated with the exception of the 10-acre area where the risk to OE is high.



#### EXPLANATION

- |                          |                                |
|--------------------------|--------------------------------|
| — County Boundary        | --- Sierra Army Depot Boundary |
| - - - State Boundary     | ▨ Sierra Army Depot            |
| Interstate Highway       | Honey Lake                     |
| U.S. Highway             | ■ Airports                     |
| California State Highway |                                |
| Nevada State Highway     |                                |



#### Regional Map

Figure 1

## 2.0 STATEMENT AND PURPOSE OF SCOPE

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The purpose of this EE/CA Action Memorandum is to document the decision by which the OE response actions selected for the East Shore Area will be implemented. The U.S. Army Corps of Engineers (USACE), Sacramento District (CESPK), is the lead agency under the Defense Environmental Restoration Program (DERP) at the SIAD. Under DERP, the Ordnance Response Program addresses "other environmental damage (such as the detection and disposal of unexploded ordnance [UXO]), which creates an imminent and substantial endangerment to the public health, welfare, and the environment."

The OE response action alternative that will be implemented at the East Shore Area is in compliance with those outlined in 40 Code of Federal Regulations (CFR) Part 300.415(b)(4) of the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). The U.S. Army will implement the following OE response action over 983 acres of the East Shore Area: Subsurface Clearance of OE to Depth utilizing Hand-Held Geophysical Equipment (e.g., Mine Lab 2 Explorer). The Subsurface Clearance to Depth will consist of the removal and disposal of all OE and OE-related scrap items, of size 20 millimeter (mm) or larger, from the surface and subsurface, to a minimum depth of 12 inches below ground surface (bgs). The EE/CA Report for the East Shore Area was prepared to document the evaluation process and to recommend the best OE response action alternatives for the East Shore Area. Public and local agency comments received during the public review comment period regarding the recommendations presented in the Draft Final EE/CA Report (Earth Tech, March 2004) are addressed in the USACE-approved Final EE/CA Report (Earth Tech, April 2004).



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### 3.0 PROJECT JUSTIFICATION

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The results of the Phase I, Phase II, and Phase III EE/CA field investigations indicated that OE is present within the East Shore Area, affecting both human safety and the environment and public interest. In most areas at the East Shore Area where ordnance was recovered, the public will have open access, and there are no effective physical or administrative controls to ensure their safety from potential exposure to OE.

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## 4.0 OE RESPONSE ACTION ALTERNATIVES CONSIDERED

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Four OE response action alternatives were evaluated in the EE/CA Report (Earth Tech, April 2004) for the East Shore Area. The evaluation analyzed the effectiveness, implementability, and cost of each of the following alternatives:

**OE Response Action Alternative 1 - No Department of Defense Action Indicated (NDAI).** Institutional Controls, Surface Clearance of OE, and Subsurface Clearance of OE to Depth would not occur under this alternative. However, NDAI indicates that the Formerly Used Defense Sites (FUDS) program will review any new information regarding Department of Defense (DOD) activities as it becomes available. If OE is discovered in the future, CESPCK will reconsider the status of the property. NDAI is indicative of a determination that is open to further and future review of an area.

**OE Response Action Alternative 2 - Institutional Controls.** Institutional Controls protect property owners and the public from hazards present at a site by warning of the OE hazard and/or limiting the access or use of a site. Institutional Controls include the use of engineering controls, educational programs, legal mechanisms, and construction support. The overall effectiveness of Institutional Controls depends entirely on local agencies and private landowner support, involvement, and willingness to enforce and maintain Institutional Controls implemented to eliminate public interaction with OE.

**OE Response Action Alternative 3 - Surface Clearance of OE.** This OE response action alternative includes the location and removal of ordnance from the ground surface. For surface clearance, teams of UXO-qualified personnel use visual identification to search for and remove OE from the ground surface within a specified area.

**OE Response Action Alternative 4 - Subsurface Clearance of OE to Depth.** This OE response action alternative includes the subsurface detection (using geophysical instrumentation), excavation, and removal of all detectable OE items within a specified area.

A more detailed description of the four OE response action alternatives can be found in Chapter 7.0 of the EE/CA Report (Earth Tech, April 2004).

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## 5.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

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All community relations support was coordinated through CESPK, who ensured that the local community was informed by conducting periodic public meetings and Restoration Advisory Board (RAB) meetings to discuss project-related activities and the status of the East Shore Area.

During the EE/CA field investigations, CESPK, the U.S. Army Engineering and Support Center, Huntsville (CEHNC), and Earth Tech held several public meetings to brief local community organizations and agencies concerning the ordnance investigation at the East Shore Area. Earth Tech representatives met with and participated in the following local community events: (1) RAB meetings, (2) Lassen County Board of Supervisor meetings, and (3) local stakeholder meetings.

A public meeting was also held at the conclusion of the EE/CA field investigations to brief and receive comments from the public and local agencies concerning the results of the EE/CA field investigations. The public was also informed during this meeting of the location of the administrative records that have been established for the project site. The administrative records are located at the Sierra Army Depot, Building 75; Herlong Public Library; Susanville Public Library; Reno Public Library; and the DTSC Sacramento Office. The administrative records contain documents that are accessible to the public. These documents were prepared in support of the ordnance investigation at the East Shore Area.

On 17 March 2004, a public meeting was held at the Chapel in Herlong to present the Draft Final EE/CA Report (Earth Tech, March 2004) to the public and to receive public and local agency comments to the EE/CA Report.

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## 6.0 COORDINATION SUMMARY

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This project was coordinated with several federal, state (including DTSC), and local agencies, as well as citizen advisory groups (RAB and local community groups) prior to and during the EE/CA process. All stakeholders were encouraged to participate in the EE/CA process, and copies of the EE/CA Work Plan and the EE/CA Report were made available to the aforementioned groups for their review and comment.



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## 7.0 SELECTION CRITERIA

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Each of the four OE response action alternatives was evaluated against the following criteria. These criteria are discussed in greater detail in Chapter 7.0 of the EE/CA Report. The evaluation of each of these criteria can be found in Chapter 8.0 of the EE/CA Report.

**Effectiveness.** Effectiveness is a measure of an OE response action's ability to reduce the potential for exposure to or interaction with OE. Effectiveness takes into account the protection of human safety, compliance with applicable or relevant and appropriate requirements (ARARs), and both long- and short-term effectiveness.

**Implementability.** Implementability is a measure of whether an OE response action can be physically and administratively conducted. Implementability takes into account both technical and administrative feasibility, availability of services and materials, and local agency and community acceptance.

**Cost.** Cost is a measure of the actual dollar value of each OE response action alternative, the investment value, and its corresponding benefit.

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## 8.0 DESCRIPTION OF SELECTED RECOMMENDATIONS

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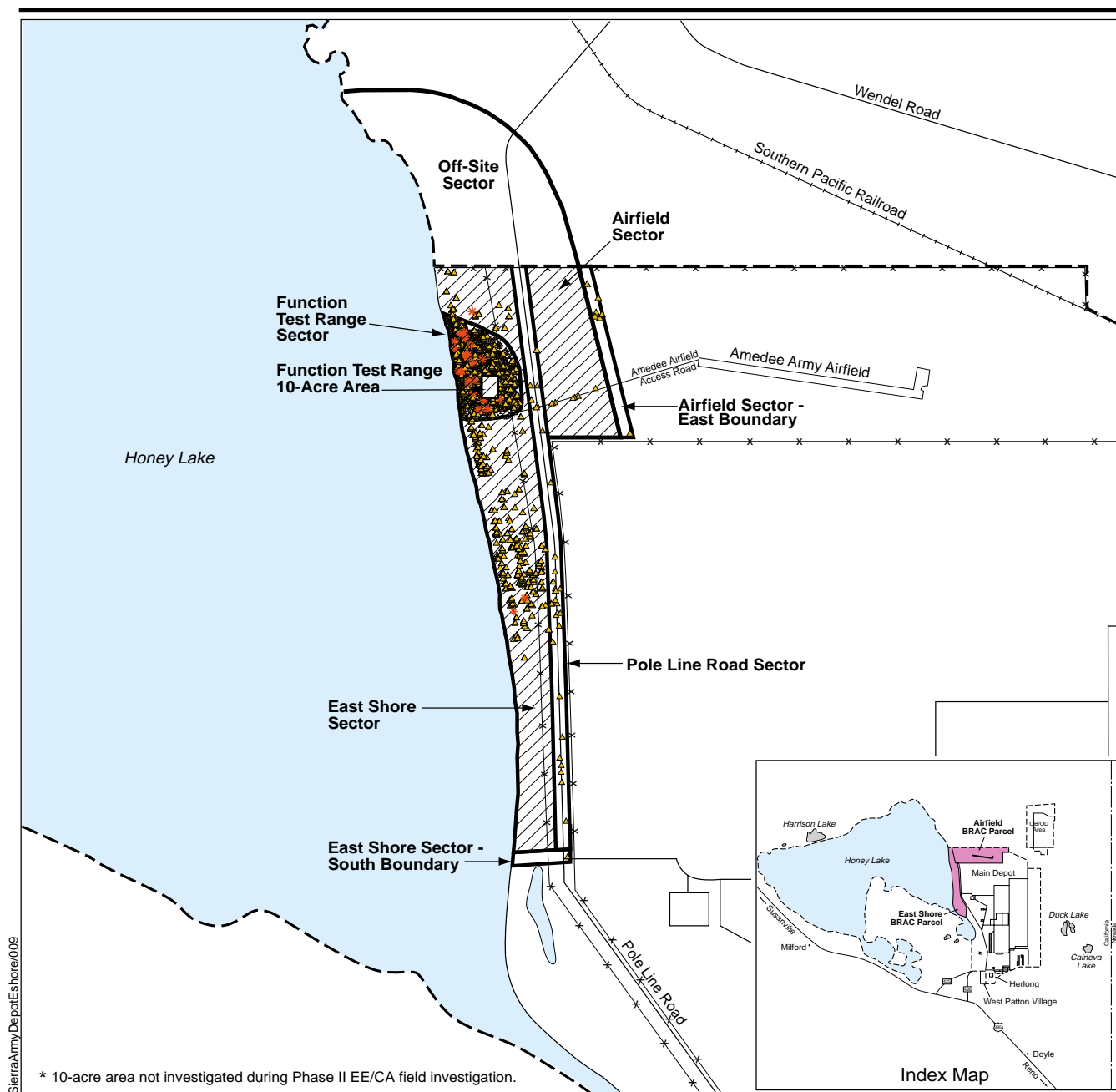
The recommendations for the East Shore Area were developed to provide the most effective protection to the public from OE. The recommendations were based on numerous data, including past, current, and future land use; the quantity and location of OE and OE scrap recovered during the Phase I, Phase II, and Phase III EE/CA field investigations and during previous investigations; and the results of the qualitative risk analysis presented in Chapter 4.0 of the EE/CA Report. These recommendations were also based on a detailed evaluation that takes into account the effectiveness, implementability (including local agency and community acceptance), and cost of each OE response action alternative, as presented in Chapter 8.0 of the Final EE/CA Report (Earth Tech, April 2004).

Costs for the OE response actions to be implemented at the East Shore Area were developed in the EE/CA Report. Detailed costing backup can be found in Appendix J of the EE/CA Report.

### 8.1 RECOMMENDATIONS FOR INDIVIDUAL SITES

The assessment of OE Hazard and the evaluation of the OE response action alternatives in Chapter 4.0 and Chapter 8.0 of the Draft Final EE/CA Report (Earth Tech, March 2004) identified a Surface Clearance of OE (Alternative 3) as the most appropriate OE response action for the East Shore Area. This action is in direct compliance with DOD Safety Standards Chapter 12, DOD 6055.9 STD (Draft Revision dated 03 December 2003). However, because the East Shore Area project site will be opened to the construction of a new county road, resulting in greater public access and increased risk to potential OE, the Army, in an abundance of caution and to ensure greater public protection, will perform a subsurface clearance (removal) of all ordnance and ordnance-related scrap within areas not previously cleared of subsurface ordnance. Therefore, the Final EE/CA Report (Earth Tech, April 2004) identified a Subsurface Clearance of OE to Depth utilizing Hand-Held (e.g., Mine Lab 2 Explorer) Geophysical Equipment (Alternative 4) as the most appropriate OE response action for the East Shore Area. The Subsurface Clearance to Depth will be conducted over 983 acres of the East Shore Area and will consist of the removal and disposal of all OE and OE-related scrap items, of size 20mm or larger, from the surface and subsurface, to a minimum depth of 12 inches bgs.

Figure 2 shows the OE response actions that will be implemented for each sector at the East Shore Area. A description of these OE response actions is provided in detail in the following sections. Table 1 provides a summary of the OE response actions that will be implemented for each sector at the East Shore Area. Detailed cost assumptions and cost backup are provided in Appendix J of the Final EE/CA Report (Earth Tech, April 2004).



## EXPLANATION

Airfield Sector (243 acres)  
 East Shore Sector (618 acres)  
 Off-Site Sector (514 acres)  
 Pole Line Road Sector (68 acres)  
 Function Test Range Sector (122 acres)

— Sector Boundary  
 - - - Sierra Army Depot Boundary  
 ▨ Subsurface Clearance of OE to Depth Utilizing Hand-Held Geophysical Equipment

\* Ordnance and Explosives (OE) recovered during EE/CA field investigations  
 ▲ OE scrap recovered during EE/CA field investigations  
 - x - x - Existing Fencing

0 .25 .5 1 Mile



Note: Warning signs presently exist along west boundary of Former Honey Lake Demolition Range.

## OE Response Actions

Figure 2

**Table 1. Estimated Costs for OE Response Actions**

OE Response Area	Total Acreage	Total OE	Total OE Scrap	OE Response Action	Estimated Cost
Airfield Sector	243	0	17	Subsurface Clearance to Depth utilizing Hand-Held Geophysical Equipment (as outlined in Section 8.1.1) <sup>(a)</sup>	\$566,919 <sup>(b)</sup>
East Shore Sector	618	3	251	Subsurface Clearance to Depth utilizing Hand-Held Geophysical Equipment (as outlined in Section 8.1.2) <sup>(a)</sup>	\$1,441,794 <sup>(c)</sup>
Off-Site Sector	514	0	0	No DOD Action Indicated (as outlined in Section 8.1.3) <sup>(a)</sup>	--
Function Test Range Sector (Including 10-Acre Area)	122	114	14,102	Subsurface Clearance to Depth utilizing Hand-Held Geophysical Equipment (as outlined in Section 8.1.4) <sup>(a)</sup>	\$284,626 <sup>(d)</sup>
Pole Line Road Sector	68	0	52	No DOD Action Indicated (as outlined in Section 8.1.5) <sup>(a)</sup>	--
East Shore Area (project site)	--	--	--	One time costs associated with conducting a Subsurface Clearance to Depth utilizing Hand-Held Geophysical Equipment	\$182,000 <sup>(e)</sup>
<b>Total</b>	<b>1,565</b>	<b>117</b>	<b>14,422</b>		<b>\$2,475,339</b>

Notes: (a) The Subsurface Clearance to Depth will consist of the removal and disposal of all OE and OE-related scrap items, of size 20 millimeter or larger, from the surface and subsurface, to a minimum depth of 12 inches below ground surface.

(b) Cost consist of a subsurface clearance over 243 acres at a cost of \$2,333 per acre.

(c) Cost consist of a subsurface clearance over 618 acres at a cost of \$2,333 per acre.

(d) Cost consist of a subsurface clearance over 122 acres at a cost of \$2,333 per acre.

(e) The one-time cost of \$182,000 is required to implement the recommended Subsurface Clearance of OE to Depth. This one-time cost would include project planning, the preparation of a Project Work Plan, personnel mobilization and demobilization, site set-up, and the preparation of a Final Report.

DOD = Department of Defense

OE = ordnance and explosives

### 8.1.1 Airfield Sector

Subsurface Clearance of OE to Depth utilizing Hand-Held Geophysical Equipment will be implemented for the Airfield Sector (see Figure 2 and Table 1).

This decision for the Airfield Sector is based upon the following:

- OE sampling in this sector was exploratory (approximately 15 percent of the sector was geophysically mapped during the Phase I and Phase II EE/CA field investigations, and the area adjacent to the east edge of the sector was investigated during the Phase III EE/CA field investigation) to assess whether any munitions are present as a result of past military activities.

- Seventeen OE scrap items were recovered during the three EE/CA field investigations (based on Phase II EE/CA sector boundaries); therefore, there is a moderate potential for OE in this area.
- There were no OE (hazardous) items recovered within the Airfield Sector during any of the three EE/CA field investigations (see Figure 2); therefore, no additional fencing has been recommended for this sector.
- A large portion of this sector lies within the clear zone for the Amedee Army Airfield and activity such as the maintenance of navigational aides are anticipated.

Therefore, a Subsurface Clearance to Depth will be performed in this sector to reduce the risk associated with aforementioned airfield maintenance activities that may occur with future area land use.

The estimated cost to implement a Subsurface Clearance to Depth over the Airfield Sector is \$566,919 (see Table 1). Compliance with federal and state environmental laws is not anticipated to affect implementation of these recommendations. Therefore, no additional costs for environmental compliance have been provided.

#### **8.1.2 East Shore Sector**

Subsurface Clearance to Depth utilizing Hand-Held Geophysical Equipment will be implemented for the East Shore Sector (see Figure 2 and Table 1).

This decision for the East Shore Sector is based upon the following:

- OE sampling in this sector was exploratory (approximately 7 percent of the sector was geophysically mapped during the Phase I EE/CA field investigation, and the area adjacent to the south edge of the sector was investigated during the Phase III EE/CA field investigation) to assess whether any munitions are present as a result of past military activities at the Former Honey Lake Demolition Range and/or the Function Test Range.
- Three OE items (one land mine fuze, 1 M1 anti-tank land mine [HE-unfuzed], and 1 60mm mortar [HE]) and 251 OE scrap items were recovered during the EE/CA field investigations. The three OE items recovered are all considered sensitive (see Chapter 3.0 of the EE/CA Report) and could be detonated with moderate effort (e.g., dropping the item, striking it, driving over it, or exposing it to extreme heat). The land mine fuze, if detonated, would likely cause minor injury, while the M1 anti-tank land mine (HE) and the 60mm mortar (HE) would likely cause fatal injury if detonated. None of these OE items were recovered east of the existing fence line (see Figure 2); therefore, no additional fencing has been recommended for this sector.

- There is no anticipated change in land use for this area; therefore, access to this sector is anticipated to be minimal. However, it will be easier for the public to access this area following property transfer from the U.S. Army to Lassen County.

The estimated cost to implement a Subsurface Clearance to Depth over the East Shore Sector is \$1,441,794 (see Table 1). This estimate does not include costs associated with compliance with federal and state environmental laws, such as those associated with wetlands mitigation, endangered/sensitive species relocation, and revegetation of areas following surface clearance activities in specified areas.

### **8.1.3 Off-Site Sector**

No DOD Action Indicated is the recommendation for the Off-Site Sector (see Figure 2 and Table 1). This decision is based upon the following:

- OE sampling in this sector was exploratory (approximately 7 percent of the sector was geophysically mapped) to assess if any ordnance was present as a result of past military activities at the Former Honey Lake Demolition Range and/or the Function Test Range.
- There were no OE or OE scrap items recovered in this sector (see Figure 2) during the Phase I EE/CA field investigation; therefore, very little benefit would be gained by conducting an extensive clearance action in an area with no evidence of OE.
- A visual surface search over the south region of this sector during the Phase II EE/CA field investigation failed to identify any OE or OE scrap.

### **8.1.4 Function Test Range Sector**

Subsurface Clearance to Depth utilizing Hand-Held Geophysical Equipment will be implemented for the Function Test Range Sector (see Figure 2 and Table 1).

This decision for the Function Test Range Sector is based upon the following:

- Although a subsurface sampling investigation was conducted throughout this sector (114 OE [hazardous] items and 14,102 OE scrap items were recovered), quality assurance inspections were not conducted by the USACE; therefore, this sector cannot be considered clear of OE.
- A roughly 10-acre area heavily contaminated with OE was not investigated during the EE/CA (see Figure 2).

OE warning signs have not been recommended for the Function Test Range Sector because warning signs are presently in place west of the function test range on the dry lake area region of the former demolition range.



The estimated cost to implement a Subsurface Clearance to Depth over the Function Test Range Sector is \$284,626 (see Table 1). Compliance with federal and state environmental laws is not anticipated to impact implementation of these recommendations. Therefore, no additional costs for environmental compliance have been provided.

#### **8.1.5 Pole Line Road Sector**

No DOD Action Indicated is the recommendation for the Pole Line Road Sector (see Figure 2 and Table 1). This decision is based upon the following:

- A 100-percent investigation of all identified anomalies (with the exception of seven anomalies) was conducted in the Pole Line Road Sector during the Phase II EE/CA field investigation (Note: The seven uninvestigated anomalies will be reacquired and investigated during the implementation phase of the subsurface clearance actions that are recommended for specified areas within the East Shore Area).
- Fifty-two OE scrap items were recovered during the EE/CA investigation (based on Phase II EE/CA sector boundaries). Although OE scrap is inert and does not pose a safety hazard, it does indicate a potential for OE in this area (even though there were no OE recovered during the EE/CA field investigation).
- Implementing a clearance action in this area is not warranted because the 100-percent investigation of all identified anomalies (once the 7 remaining anomalies are investigated) eliminated the need for a clearance action and construction support.

## 9.0 LONG-TERM MONITORING

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Since the remaining OE-impacted areas within the East Shore Area project site will be cleared to depth (i.e., the maximum risk to OE is being removed), and the land will be open for unlimited use, long-term monitoring activities are not required.

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## 10.0 TRADE-OFF ANALYSIS

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The OE response actions that will be implemented at the East Shore Area are the most appropriate OE response actions based on the results of the Ordnance and Explosives Risk Impact Assessment (OERIA) and the evaluation of the four OE response action alternatives (which includes acceptability by local agencies and communities) in Chapter 4.0 and Chapter 8.0 of the East Shore Area EE/CA Report (Earth Tech, April 2004), respectively. Additionally, no irretrievable resources will be lost due to the proposed OE response actions.

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## 11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

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If the proposed OE response actions outlined in this Action Memorandum are delayed or are not implemented, the potential exists for continued endangerment to human safety.

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## 12.0 REFERENCES

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Earth Tech, March 2004. Draft Final Volume I Engineering Evaluation/Cost Analysis, Former Honey Lake Demolition Range, Sierra Army Depot, Lassen County, California, prepared for U.S. Army Engineering and Support Center, Huntsville.

Earth Tech, April 2004. Final Volume I Engineering Evaluation/Cost Analysis, Former Honey Lake Demolition Range, Sierra Army Depot, Lassen County, California, prepared for U.S. Army Engineering and Support Center, Huntsville.

U.S. Army Corps of Engineers, Mobile District, February 1998. Environmental Assessment for the Disposal and Reuse of the BRAC Parcels at Sierra Army Depot, California.



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